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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/160,583 09/25/98 KAMO

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022850 IM52/1017  
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EXAMINER

CREPEAU, J

ART UNIT

PAPER NUMBER

1745  
DATE MAILED:

10/17/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

**Office Action Summary**

Application No.

09/160,583

Applicant(s)

KAMO, TAKAKO

Examiner

Jonathan S. Crepeau

Art Unit

1745

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 August 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-21 is/are pending in the application.
- 4a) Of the above claim(s) 6-18 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-5, 19 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 19.

- 4) ☒ Interview Summary (PTO-413) Paper No(s). 20.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

1. This Office action is responsive to the CPA filed on August 14, 2001 and addresses claims 2-21. Claims 6-18 and 20 remain withdrawn from consideration. Claims 2-5, 19, and 21 remain rejected under 35 USC §103 for the reasons of record. This action is non-final.

### *Claim Rejections - 35 USC § 103*

2. Claims 2-5, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al (U.S. Patent 5,702,845).

The reference teaches a secondary battery with a nonaqueous electrolytic solution in column 9, lines 39-60. In column 7, lines 44-60, the reference further teaches a positive electrode active material comprising a transition metal sulfide which may comprise copper, silver, or gold. The negative electrode may comprise a metal oxide, as taught in column 7, line 63. As disclosed in the Examples, the positive active material may be present in an amount of 92 % by weight of the positive electrode.

The reference does not explicitly teach that the *negative* electrode comprises a transition metal sulfide, or that the Cu, Ag, or Au is present in a range of 0.4 to 5 (or 0.6 to 2) per unit of sulfur.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be able to ascertain that the

positive electrode of Kawakami et al. is capable of functioning as a negative electrode. In any secondary (rechargeable) battery, it is well known that the "positive" and "negative" electrode designations are dependent on whether the battery is being charged or discharged. Since the electrode materials of Kawakami et al. are substantially identical to those recited in the instant claims and disclosed in the instant specification (see page 13 for disclosure of a metal oxide), the "positive" and "negative" designations are dependent on the mode of operation of the battery. Accordingly, it is seen that the transition metal sulfide of Kawakami et al. may also function as a negative active material.

Regarding the stoichiometric compositional ranges set forth in the instant claims, these ranges are not seen to distinguish the claims from the reference. As detailed in the rejection below, the existence of compounds which fall within these ranges in the battery of Kawakami et al. may be easily ascertained by the artisan. Additionally, the stoichiometry of the compositions may be routinely optimized by the artisan to affect the basic characteristics of the compounds and the resulting batteries. Accordingly, these ranges and compositions are not seen to distinguish over the reference.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al. as applied to claims 2-5, 19, and 21 above, and further in view of Kondo et al. (EP 284104), or Plichta et al (U.S. Pat. 5,154,990).

Kawakami et al. do not explicitly teach a negative electrode material of CuS, Cu<sub>2</sub>S or Ag<sub>2</sub>S.

Kondo et al. teach a secondary battery comprising a negative electrode material of  $\text{Cu}_2\text{S}$  or  $\text{Ag}_2\text{S}$  on page 4, line 3.

Plichta et al. teach a secondary battery comprising a negative electrode material of  $\text{CuS}$  in column 3, lines 8-11.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosures of Kondo et al. and Plichta et al. exemplify that  $\text{CuS}$ ,  $\text{Cu}_2\text{S}$  and  $\text{Ag}_2\text{S}$  are well-known transition metal sulfides comprising copper and silver, and furthermore, are useful in secondary batteries as a negative electrode material. Accordingly, it is deemed that the artisan would have sufficient motivation to use these materials in the battery of Kawakami et al.

#### ***Response to Declaration***

4. Applicant's declaration (paper #18, filed 8/17/01) has been considered but is not deemed to be persuasive in overcoming the instant rejections. It is first noted that the declaration compares only one material,  $\text{MnS}$ , to only one of the claimed materials,  $\text{Ag}_2\text{S}$  (see Table 1 of instant specification). Applicant has not shown any actual results for  $\text{MnS}$ , and instead simply states that the cell using  $\text{MnS}$  "did not work in the same charge/discharge test as in Example 1." The scope of this statement is unclear; i.e., it is not clear if the comparative cell is completely inoperable, or it is operable but merely shows a lesser capacity than the  $\text{Ag}_2\text{S}$  cell of Example 1. Furthermore, to be commensurate with the instant claims, it is the Examiner's position that more of the claimed materials of formula (1) should be tested, e.g., appropriate sulfides comprising

copper and gold. It is also suggested that several other comparative species disclosed by Kawakami et al., in addition to MnS, be tested in order to clearly establish the alleged superiority of the claimed species over the comparative species. Unexpected results shown for the claimed subscript ranges may also be persuasive in establishing patentability of the claimed species.

Finally, Applicant's statement that "[t]hus, all the sulfide materials of Kawakami et al. do not function as a negative electrode and the materials used for positive and negative electrode in the patent are not always interchangeable" is not seen as persuasive because as stated above, the results presented by Applicant are considered to be inconclusive.

### *Conclusion*

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gabrielle Brouillette, can be reached at (703) 308-0756. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 305-3599.

Art Unit: 1745

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JSC

October 14, 2001



**GABRIELLE BROUILLETTE**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 1700**